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EXAMINER	
PERSINO, RAYMOND B	

ART UNIT	PAPER NUMBER
2682	

DATE MAILED: 05/21/2004 9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/513,155	BAHL ET AL.	
	Examiner	Art Unit	
	Raymond B. Persino	2682	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 February 2004 and 27 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5,9-14,18-27,31-36 and 40-56* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5,9,10,14,18,19,23-27,31,32,36,40,41,45-49 and 53* is/are rejected.

7)☒ Claim(s) *11-13,20-22,33-35,42-44,50-52 and 54-56* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2/27/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 23 and 45 are rejected under 35 U.S.C. 102(b) as being anticipated by DENT (US 5,404,376 A).

Regarding claim 1, DENT discloses measuring a wireless signal strength; comparing the measured wireless signal strength to a table of mathematically estimated wireless signal strengths (column 7 lines 61-68) and corresponding mobile unit locations; finding a table entry whose mathematically estimated wireless signal strength is closest, by distance in signal space, to the measured wireless signal strength; and, determining the location of the mobile unit with reference to the found table entry (column 4 line 15 to column 5 line 59).

Regarding claim 23, DENT discloses measuring a computer-readable medium having computer-executable instructions for performing steps, comprising: measuring a wireless signal strength; comparing the measured wireless signal strength to a table (column 7 lines 61-68) of mathematically estimated wireless signal strengths and corresponding mobile unit locations; finding a table entry whose mathematically estimated wireless signal strength is closest, by distance in signal space, to the

measured wireless signal strength; and, determining the location of the mobile unit with reference to the found table entry (column 4 line 15 to column 5 line 59).

Regarding claim 45, DENT discloses a mobile unit comprising: a wireless interface hardware, wherein the wireless interface hardware obtains a wireless signal strength; a memory storage, storing a table of mathematically estimated wireless signal strengths (column 7 lines 61-68) and corresponding mobile unit locations; and a central processing unit, wherein the central processing unit compares the obtained wireless signal strength to the table of mathematically estimated wireless signal strengths and corresponding mobile unit locations, finds a table entry whose mathematically estimated wireless signal strength is closest, by distance in signal space, to the obtained wireless signal strength, and determines the location of the mobile unit with reference to the found table entry (column 4 line 15 to column 5 line 59).

Claim Rejections - 35 USC § 103

3. Claims 1-5, 9, 10, 14, 18, 19, 23-27, 31, 32, 36, 40, 41, 45-49 and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over SUGIURA et al (GB 2311697 A) in view of DENT (US 5,404,376 A).

Regarding claim 1, SUGIURA ET AL discloses measuring a wireless signal strength; comparing the measured wireless signal strength to a table of wireless signal strengths and corresponding mobile unit locations; finding a table entry whose wireless signal strength is closest, by distance in signal space, to the measured wireless signal strength; and, determining the location of the mobile unit with reference to the found

table entry (page 71 line 1 to page 82 line 3). However, SUGIURA ET AL does not disclose that the estimated wireless signal strengths are mathematically estimated. DENT discloses using a table of wireless signal strengths that are mathematically estimated (column 7 lines 61-68). Therefore it would have been obvious to a person of ordinary skill in the art that for a table of wireless signal strengths to be mathematically estimated. Averaging the information that makes up the information in the table yields more accurate information by minimizing anomalies.

Regarding claim 2, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to the found table entry's corresponding mobile unit location (page 71 line 1 to page 82 line 3).

Regarding claim 3, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the finding the table entry whose mathematically estimated wireless signal strength is closest to the measured wireless signal strength includes finding a plurality of table entries and wherein the determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to a spatial average of the found plurality of table entries' corresponding mobile unit location (page 71 line 1 to page 82 line 3).

Regarding claim 4, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the

determining the location of the mobile unit to be proximate to a spatial average of the found plurality of table entries' corresponding mobile unit locations includes multiplying each found table entry's corresponding mobile unit location by a weighting factor prior to the spatial averaging (page 71 line 1 to page 82 line 3).

Regarding claim 5, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the measuring the wireless signal strength includes measuring, at the mobile unit, a wireless signal strength of a base station, and wherein the table of mathematically estimated wireless signal strengths and corresponding mobile unit locations includes mathematical estimates of base station wireless signal strengths at the corresponding mobile unit locations (page 71 line 1 to page 82 line 3).

Regarding claim 9, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of base station wireless signal strengths at the corresponding mobile unit locations are derived by performing steps comprising determining a reference base station wireless signal strength at a reference distance from the base station (column 7 lines 61-68).

Regarding claim 10, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of base station wireless signal strengths at the corresponding mobile unit locations are derived by performing steps comprising determining a distance between the base station and the corresponding mobile unit locations (column 7 lines 61-68).

Regarding claim 14, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the measuring the wireless signal strength includes measuring, at a base station, a wireless signal strength of the mobile unit, and wherein the table of mathematically estimated wireless signal strengths and corresponding mobile unit locations includes, for mobile units at the corresponding mobile unit locations, mathematical estimates of mobile unit wireless signal strengths at one or more base stations (page 63 line 12 to page 82 line 3).

Regarding claim 18, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of mobile unit wireless signal strengths at the one or more base stations are derived by performing steps comprising determining a reference mobile unit wireless signal strength at a reference distance from the mobile unit (column 7 lines 61-68).

Regarding claim 19, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of mobile unit wireless signal strengths at the one or more base stations are derived by performing steps comprising determining a distance between the one or more base stations and the corresponding mobile unit locations (column 7 lines 61-68).

Regarding claim 23, SUGIURA ET AL discloses that a computer-readable medium having computer-executable instructions for performing steps, comprising: measuring a wireless signal strength; comparing the measured wireless signal strength to a table of wireless signal strengths and corresponding mobile unit locations; finding a

table entry whose wireless signal strength is closest, by distance in signal space, to the measured wireless signal strength; and, determining the location of the mobile unit with reference to the found table entry (page 71 line 1 to page 82 line 3). However, SUGIURA ET AL does not disclose that the estimated wireless signal strengths are mathematically estimated. DENT discloses using a table of wireless signal strengths that are mathematically estimated (column 7 lines 61-68). Therefore it would have been obvious to a person of ordinary skill in the art that for a table of wireless signal strengths to be mathematically estimated. Averaging the information that makes up the information in the table yields more accurate information by minimizing anomalies.

Regarding claim 24, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to the found table entry's corresponding mobile unit location (page 71 line 1 to page 82 line 3).

Regarding claim 25, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the finding the table entry whose mathematically estimated wireless signal strength is closest to the measured wireless signal strength includes finding a plurality of table entries and wherein the determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to a spatial average of the found plurality of table entries' corresponding mobile unit locations (page 71 line 1 to page 82 line 3).

Regarding claim 26, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the determining the location of the mobile unit to be proximate to a spatial average of the found plurality of table entries' corresponding mobile unit locations includes multiplying each found table entry's corresponding mobile unit location by a weighting factor prior to the spatial averaging (page 71 line 1 to page 82 line 3).

Regarding claim 27, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that measuring the wireless signal strength includes measuring, at the mobile unit, a wireless signal strength of a base station, and wherein the table of mathematically estimated wireless signal strengths and corresponding mobile unit locations includes mathematical estimates of base station wireless signal strengths at the corresponding mobile unit locations (page 71 line 1 to page 82 line 3).

Regarding claim 31, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of base station wireless signal strengths at the corresponding mobile unit locations are derived by performing steps comprising determining a reference base station wireless signal strength at a reference distance from the base station (column 7 lines 61-68).

Regarding claim 32, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of base station wireless signal strengths at the corresponding mobile unit

locations are derived by performing steps comprising determining a distance between the base station and the corresponding mobile unit locations (column 7 lines 61-68).

Regarding claim 36, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the measuring the wireless signal strength includes measuring, at a base station, a wireless signal strength of the mobile unit, and wherein the table of mathematically estimated wireless signal strengths and corresponding mobile unit locations includes, for mobile units at the corresponding mobile unit locations, mathematical estimates of mobile unit wireless signal strength at one or more base stations (page 63 line 12 to page 82 line 3).

Regarding claim 40, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of mobile unit wireless signal strengths at the one or more base stations are derived by performing steps comprising determining a reference mobile unit wireless signal strength at a reference distance from the mobile unit (column 7 lines 61-68).

Regarding claim 41, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. DENT further discloses that the mathematical estimates of mobile unit wireless signal strengths at the one or more base stations are derived by performing steps comprising determining a distance between the one or more base stations and the corresponding mobile unit locations (column 7 lines 61-68).

Regarding claim 45, SUGIURA ET AL discloses a mobile unit comprising: a wireless interface hardware, wherein the wireless interface hardware obtains a wireless

signal strength; a memory storage, storing a table of wireless signal strengths and corresponding mobile unit locations; and a central processing unit, wherein the central processing unit compares the obtained wireless signal strength to the table of wireless signal strengths and corresponding mobile unit locations, finds a table entry whose wireless signal strength is closest, by distance in signal space, to the obtained wireless signal strength, and determines the location of the mobile unit with reference to the found table entry (page 71 line 1 to page 82 line 3). However, SUGIURA ET AL does not disclose that the estimated wireless signal strengths are mathematically estimated. DENT discloses using a table of wireless signal strengths that are mathematically estimated (column 7 lines 61-68). Therefore it would have been obvious to a person of ordinary skill in the art that for a table of wireless signal strengths to be mathematically estimated. Averaging the information that makes up the information in the table yields more accurate information by minimizing anomalies.

Regarding claim 46, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to the found table entry's corresponding mobile unit location (page 71 line 1 to page 82 line 3).

Regarding claim 47, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the finding the table entry whose mathematically estimated wireless signal strength is closest to the obtained wireless signal strength includes finding a plurality of table entries and wherein

the determining the location of the mobile unit with reference to the found table entry includes determining the location of the mobile unit to be proximate to a spatial average of the found plurality of table entries' corresponding mobile unit locations (page 71 line 1 to page 82 line 3).

Regarding claim 48, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the determining the location of the mobile unit to be proximate to a spatial average of the found plurality of table entries' corresponding mobile unit locations includes multiplying each found table entry's corresponding mobile unit location by a weighting factor prior to the spatial averaging (page 71 line 1 to page 82 line 3).

Regarding claim 49, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the obtaining the wireless signal strength includes measuring, at the mobile unit, a wireless signal strength of a base station, and wherein the table of mathematically estimated wireless signal strengths and corresponding mobile unit locations includes mathematical estimates of base station wireless signal strengths at the corresponding mobile unit locations (page 71 line 1 to page 82 line 3).

Regarding claim 53, see the rejection of the parent claim concerning the subject matter this claim is dependant upon. SUGIURA ET AL further discloses that the obtaining the wireless signal strength includes requesting, from a base station, a wireless signal strength of the mobile unit as measured at the base station, and wherein the table of mathematically estimated wireless signal strengths and corresponding

mobile unit locations includes, for mobile units at the corresponding mobile unit locations, mathematical estimates of mobile unit wireless signal strengths at one or more base stations (page 63 line 12 to page 82 line 3).

Allowable Subject Matter

4. Claims 11-13, 20-22, 33-35, 42-44, 50-52 and 54-56 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 11, 33 and 50, the applicant includes the subject matter of the mathematical estimates of base station wireless signal strengths at the corresponding mobile unit locations are derived by performing steps comprising: determining an existing number of walls between the base station and the corresponding mobile unit locations; and determining a wall attenuation factor (page 82 line 5 to page 90 line 4).

Regarding claims 20, 42 and 54, the applicant includes the subject matter of the mathematical estimates of mobile unit wireless signal strengths at the one or more base stations are derived by performing steps comprising: determining an existing number of walls between the one or more base stations and the corresponding mobile unit locations; and determining a wall attenuation factor (page 63 line 12 to page 70 line 23 and page 82 line 5 to page 90 line 4).

Response to Arguments

5. Applicant's arguments with respect to claims 1-56 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

CHIA (US 5,394,158 A)

DENNISON et al (US 6,324,404 B1)

JAYARAMAN et al (US 6,101,390 A)

RUTLEDGE et al (US 5,802,473 A)

7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond B. Persino whose telephone number is (703) 308-7528. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Raymond B. Persino RP
Examiner
Art Unit 2682

RP

VIVIAN CHIN
SUPERVISORY PATENT EXAMINER
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